

Before the
Federal Communications Commission
Washington, D.C. 20554

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In the Matter of)	
)	
Preserving the Open Internet)	GN Docket No. 09-191
)	
Broadband Industry Practices)	WC Docket No. <u>07-52</u>

REPORT AND ORDER

Adopted: December 21, 2010

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By the Commission: Chairman Genachowski issuing a statement; Commissioner Copps concurring and issuing a statement; Commissioner Clyburn approving in part, concurring in part and issuing a statement; Commissioners McDowell and Baker dissenting and issuing separate statements.

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I. PRESERVING THE FREE AND OPEN INTERNET

1. Today the Commission takes an important step to preserve the Internet as an open platform for innovation, investment, job creation, economic growth, competition, and free expression. To provide greater clarity and certainty regarding the continued freedom and openness of the Internet, we adopt three basic rules that are grounded in broadly accepted Internet norms, as well as our own prior decisions:

- i. **Transparency.** Fixed and mobile broadband providers must disclose the network management practices, performance characteristics, and terms and conditions of their broadband services;
- ii. **No blocking.** Fixed broadband providers may not block lawful content, applications, services, or non-harmful devices; mobile broadband providers may not block lawful websites, or block applications that compete with their voice or video telephony services; and
- iii. **No unreasonable discrimination.** Fixed broadband providers may not unreasonably discriminate in transmitting lawful network traffic.

We believe these rules, applied with the complementary principle of reasonable network management, will empower and protect consumers and innovators while helping ensure that the Internet continues to flourish, with robust private investment and rapid innovation at both the core and the edge of the network. This is consistent with the National Broadband Plan goal of broadband access that is ubiquitous and fast, promoting the global competitiveness of the United States.¹

2. Just over a year ago, we launched a public process to determine whether and what actions might be necessary to preserve the characteristics that have allowed the Internet to grow into an indispensable platform supporting our nation's economy and civic life, and to foster continued investment in the physical networks that enable the Internet. Since then, more than 100,000 commenters have provided written input. Commission staff held several public workshops and convened a Technological Advisory Process with experts from industry, academia, and consumer advocacy groups to collect their views regarding key technical issues related to Internet openness.

¹ National Broadband Plan at xi, 3–5.

3. This process has made clear that the Internet has thrived because of its freedom and openness—the absence of any gatekeeper blocking lawful uses of the network or picking winners and losers online. Consumers and innovators do not have to seek permission before they use the Internet to launch new technologies, start businesses, connect with friends, or share their views. The Internet is a level playing field. Consumers can make their own choices about what applications and services to use and are free to decide what content they want to access, create, or share with others. This openness promotes competition. It also enables a self-reinforcing cycle of investment and innovation in which new uses of the network lead to increased adoption of broadband, which drives investment and improvements in the network itself, which in turn lead to further innovative uses of the network and further investment in content, applications, services, and devices. A core goal of this Order is to foster and accelerate this cycle of investment and innovation.

4. The record and our economic analysis demonstrate, however, that the openness of the Internet cannot be taken for granted, and that it faces real threats. Indeed, we have seen broadband providers endanger the Internet's openness by blocking or degrading content and applications without disclosing their practices to end users and edge providers, notwithstanding the Commission's adoption of open Internet principles in 2005.² In light of these considerations, as well as the limited choices most consumers have for broadband service, broadband providers' financial interests in telephony and pay television services that may compete with online content and services, and the economic and civic benefits of maintaining an open and competitive platform for innovation and communication, the Commission has long recognized that certain basic standards for broadband provider conduct are necessary to ensure the Internet's continued openness. The record also establishes the widespread benefits of providing greater clarity in this area—clarity that the Internet's openness will continue, that there is a forum and procedure for resolving alleged open Internet violations, and that broadband providers may reasonably manage their networks and innovate with respect to network technologies and business models. We expect the costs of compliance with our prophylactic rules to be small, as they incorporate longstanding openness principles that are generally in line with current practices and with norms endorsed by many broadband providers. Conversely, the harms of open Internet violations may be substantial, costly, and in some cases potentially irreversible.

5. The rules we proposed in the *Open Internet NPRM* and those we adopt today follow directly from the Commission's bipartisan *Internet Policy Statement*, adopted unanimously in 2005 and made temporarily enforceable for certain broadband providers in 2005 and 2007;³ openness protections the Commission established in 2007 for users of certain wireless

² In this Order we use "broadband" and "broadband Internet access service" interchangeably, and "broadband provider" and "broadband Internet access provider" interchangeably. "End user" refers to any individual or entity that uses a broadband Internet access service; we sometimes use "subscriber" or "consumer" to refer to those end users that subscribe to a particular broadband Internet access service. Cf. *infra* note 172 (defining "consumer" and "person"). We use "edge provider" to refer to content, application, service, and device providers, because they generally operate at the edge rather than the core of the network. These terms are not mutually exclusive. See *infra* para. 20.

³ See *Appropriate Framework for Broadband Access to the Internet Over Wireline Facilities et al.*, Policy Statement, 20 FCC Rcd 14986 (2005) (*Internet Policy Statement*); *SBC Commc'ns, Inc. and AT&T Corp. Applications for Approval of Transfer of Control*, Memorandum Opinion and Order, 20 FCC Rcd 18290, 18392, para. 211 (2005); *Verizon Commc'ns Inc. and MCI, Inc. Applications for Approval of Transfer of Control*, Memorandum Opinion and Order, 20 FCC Rcd 18433, 18537, para. 221 (2005); *AT&T Inc. and BellSouth Corp. Application for Transfer of Control*, Memorandum Opinion and Order, 22 FCC Rcd 5662, 5663, para. 2 (2007).

spectrum;⁴ and a notice of inquiry in 2007 that asked, among other things, whether the Commission should add a principle of nondiscrimination to the *Internet Policy Statement*.⁵ Our rules build upon these actions, first and foremost by requiring broadband providers to be transparent in their network management practices, so that end users can make informed choices and innovators can develop, market, and maintain Internet-based offerings. The rules also prevent certain forms of blocking and discrimination with respect to content, applications, services, and devices that depend on or connect to the Internet.

6. An open, robust, and well-functioning Internet requires that broadband providers have the flexibility to reasonably manage their networks. Network management practices are reasonable if they are appropriate and tailored to achieving a legitimate network management purpose. Transparency and end-user control are touchstones of reasonableness.

7. We recognize that broadband providers may offer other services over the same last-mile connections used to provide broadband service. These “specialized services” can benefit end users and spur investment, but they may also present risks to the open Internet. We will closely monitor specialized services and their effects on broadband service to ensure, through all available mechanisms, that they supplement but do not supplant the open Internet.

8. Mobile broadband is at an earlier stage in its development than fixed broadband and is evolving rapidly. For that and other reasons discussed below, we conclude that it is appropriate at this time to take measured steps in this area. Accordingly, we require mobile broadband providers to comply with the transparency rule, which includes enforceable disclosure obligations regarding device and application certification and approval processes; we prohibit providers from blocking lawful websites; and we prohibit providers from blocking applications that compete with providers’ voice and video telephony services. We will closely monitor the development of the mobile broadband market and will adjust the framework we adopt today as appropriate.

9. These rules are within our jurisdiction over interstate and foreign communications by wire and radio. Further, they implement specific statutory mandates in the Communications Act (“Act”) and the Telecommunications Act of 1996 (“1996 Act”), including provisions that direct the Commission to promote Internet investment and to protect and promote voice, video, and audio communications services.

10. The framework we adopt aims to ensure the Internet remains an open platform—one characterized by free markets and free speech—that enables consumer choice, end-user control, competition through low barriers to entry, and the freedom to innovate without permission. The framework does so by protecting openness through high-level rules, while maintaining broadband providers’ and the Commission’s flexibility to adapt to changes in the market and in technology as the Internet continues to evolve.

II. THE NEED FOR OPEN INTERNET PROTECTIONS

11. In the *Open Internet NPRM*, we sought comment on the best means for preserving and promoting a free and open Internet.⁶ We noted the near-unanimous view that the

⁴ *Service Rules for the 698–746, 747–762 and 777–792 MHz Bands et al.*, Second Report and Order, 22 FCC Rcd 15289 (2007) (*700 MHz Second Report and Order*); 47 C.F.R. § 27.16.

⁵ *Broadband Industry Practices*, Notice of Inquiry, 22 FCC Rcd 7894, 7896, para. 8 (2007).

⁶ See *Preserving the Open Internet et al.*, Notice of Proposed Rulemaking, 24 FCC Rcd 13064, 13067–68, paras. 10, 16 (2009) (*Open Internet NPRM*).

Internet's openness and the transparency of its protocols have been critical to its unparalleled success.⁷ Citing evidence of broadband providers covertly blocking or degrading Internet traffic, and concern that broadband providers have the incentive and ability to expand those practices in the near future, we sought comment on prophylactic rules designed to preserve the Internet's prevailing norms of openness.⁸ Specifically, we sought comment on whether the Commission should codify the four principles stated in the *Internet Policy Statement*, plus proposed nondiscrimination and transparency rules, all subject to reasonable network management.⁹

12. Commenters agree that the open Internet is an important platform for innovation, investment, competition, and free expression, but disagree about whether there is a need for the Commission to take action to preserve its openness. Commenters who favor Commission action emphasize the risk of harmful conduct by broadband providers, and stress that failing to act could result in irreversible damage to the Internet.¹⁰ Those who favor inaction contend that the Internet generally is open today and is likely to remain so, and express concern that rules aimed at preventing harms may themselves impose significant costs.¹¹ In this Part, we assess these conflicting views. We conclude that the benefits of ensuring Internet openness through enforceable, high-level, prophylactic rules outweigh the costs. The harms that could result from threats to openness are significant and likely irreversible, while the costs of compliance with our rules should be small, in large part because the rules appear to be consistent with current industry practices. The rules are carefully calibrated to preserve the benefits of the open Internet and increase certainty for all Internet stakeholders, with minimal burden on broadband providers.

A. The Internet's Openness Promotes Innovation, Investment, Competition, Free Expression, and Other National Broadband Goals

13. Like electricity and the computer, the Internet is a "general purpose technology" that enables new methods of production that have a major impact on the entire economy.¹² The Internet's founders intentionally built a network that is open, in the sense that it has no gatekeepers limiting innovation and communication through the network.¹³ Accordingly, the

⁷ *Id.* at 13065, 13069–71, paras. 3, 17–23.

⁸ *Id.* at 13084, 13087–97, paras. 50, 57–80.

⁹ *Id.* at 13068, 13100–115, paras. 16, 88–141. The *Open Internet NPRM* recast the *Internet Policy Statement* principles as rules rather than consumer entitlements, but did not change the fact that protecting and empowering end users is a central purpose of open Internet protections.

¹⁰ See, e.g., Google Comments at i–ii; Netflix Comments at 3–7; Skype Comments at 1–5; Vonage Comments at 1–10; Institute for Policy Integrity (IPI) Reply at 1–7.

¹¹ See, e.g., Comcast Comments at 27–29; Time Warner Cable (TWC) Comments at 1–2; AT&T Reply at 1–5; Verizon Reply at 1–8.

¹² Letter from Wireline Competition Bureau, FCC, to Marlene Dortch, Secretary, FCC (filed Dec. 10, 2010) (WCB Letter 12/10/10), Attach. at 1–26, Timothy F. Bresnahan & M. Trajtenberg, *General Purpose Technologies: Engines of Growth*?, 65 J. OF ECONOMETRICS 83–108 (1995); WCB Letter 12/10/10, Attach. at 156–159, RICHARD G. LIPSEY ET AL., *ECONOMIC TRANSFORMATIONS: GENERAL PURPOSE TECHNOLOGIES AND LONG TERM ECONOMIC GROWTH* 132 (2005); see also Google Comments at 15; Free Press PN Reply at 9.

¹³ The Internet's openness is supported by an "end-to-end" network architecture that was formulated and debated in standard-setting organizations and foundational documents. See, e.g., WCB Letter 12/10/10, Attach. at 17–29, Vinton G. Cerf & Robert E. Kahn, *A Protocol for Packet Network Interconnection*, COM-22 IEEE TRANSACTIONS OF COMM'NS TECH. 637–48 (1974); WCB Letter 12/10/10, Attach. at 30–39, J.H. Saltzer et al., *End to End Arguments in System Design*, Second Int'l Conf. on Distributed

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Internet enables an end user to access the content and applications of her choice, without requiring permission from broadband providers. This architecture enables innovators to create and offer new applications and services without needing approval from any controlling entity, be it a network provider, equipment manufacturer, industry body, or government agency.¹⁴ End users benefit because the Internet's openness allows new technologies to be developed and distributed by a broad range of sources, not just by the companies that operate the network. For example, Sir Tim Berners-Lee was able to invent the World Wide Web nearly two decades after engineers developed the Internet's original protocols, without needing changes to those protocols or any approval from network operators.¹⁵ Startups and small businesses benefit because the Internet's openness enables anyone connected to the network to reach and do business with anyone else,¹⁶ allowing even the smallest and most remotely located businesses to access national and global markets, and contribute to the economy through e-commerce¹⁷ and online advertising.¹⁸ Because Internet openness enables widespread innovation and allows all end users and edge providers (rather than just the significantly smaller number of broadband providers) to create and determine the success or failure of content, applications, services, and devices, it maximizes commercial and non-commercial innovations that address key national challenges—including improvements in health care, education, and energy efficiency that benefit our economy and civic life.¹⁹

14. The Internet's openness is critical to these outcomes, because it enables a virtuous circle of innovation in which new uses of the network—including new content, applications, services, and devices—lead to increased end-user demand for broadband, which

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Computing Systems, 509–12 (1981); WCB Letter 12/10/10, Attach. at 49–55, B. Carpenter, Internet Engineering Task Force ("IETF"), *Architectural Principles of the Internet*, RFC 1958, 1–8 (June 1996), www.ietf.org/rfc/rfc1958.txt; Lawrence Roberts, *Multiple Computer Networks and Intercomputer Communication*, ACM Symposium on Operation System Principles (1967). Under the end-to-end principle, devices in the middle of the network are not optimized for the handling of any particular application, while devices at network endpoints perform the functions necessary to support networked applications and services. See generally WCB Letter 12/10/10, Attach. at 40–48, J. Kempf & R. Austein, IETF, *The Rise of the Middle and the Future of End-to-End: Reflections on the Evolution of the Internet Architecture*, RFC 3724, 1–14 (March 2004), [ftp://ftp.rfc-editor.org/in-notes/rfc3724.txt](http://ftp.rfc-editor.org/in-notes/rfc3724.txt).

¹⁴ See Google Comments at 13 ("[T]he end-to-end, open architectural principles underlying the Internet are its true genius, and the source of its unparalleled power."); Clearwire Comments at 3; CDT Comments at 7; Free Press Comments at 44; Open Internet Coalition (OIC) Comments at i; Vonage Comments at 2, 18.

¹⁵ See WCB Letter 12/10/10, Attach. at 27–29, TIM BERNERS-LEE, *WEAVING THE WEB* 16 (2000).

¹⁶ See, e.g., Google Comments at 5–7; OIC Comments at i, 3–12; Vonage Comments at 4; XO Comments at 13–14; see also National Broadband Plan at 284 ("Broadband and the Internet make it possible for small businesses to reach new markets and improve their business processes.").

¹⁷ Business-to-consumer e-commerce was estimated to total \$135 billion in 2009. See WCB Letter 12/10/10, Attach. at 81–180, Robert D. Atkinson et al., *The Internet Economy 25 Years After .com*, INFO. TECH. & INNOVATION FOUND., at 24 (March 2010), available at www.itif.org/files/2010-25-years.pdf.

¹⁸ The advertising-supported Internet sustains about \$300 billion of U.S. GDP. See Google Comments at 7.

¹⁹ See National Broadband Plan at 199–217, 225–40, 247–59, 272–73 (discussing the benefits of broadband-enabled telework); American Library Association (ALA) Comments at 1; Google Comments at 8–11; Public Interest Advocates (PIA) Comments at 5; XO Comments at 9.

drives network improvements, which in turn lead to further innovative network uses.²⁰ Novel, improved, or lower-cost offerings introduced by content, application, service, and device providers spur end-user demand and encourage broadband providers to expand their networks and invest in new broadband technologies.²¹ Streaming video and e-commerce applications, for instance, have led to major network improvements such as fiber to the premises, VDSL, and DOCSIS 3.0.²² These network improvements generate new opportunities for edge providers, spurring them to innovate further.²³ Each round of innovation increases the value of the Internet for broadband providers, edge providers, online businesses, and consumers. Continued operation of this virtuous circle, however, depends upon low barriers to innovation and entry by edge providers, which drive end-user demand.²⁴ Restricting edge providers' ability to reach end users, and limiting end users' ability to choose which edge providers to patronize, would reduce the rate of innovation at the edge and, in turn, the likely rate of improvements to network infrastructure.²⁵ Similarly, restricting the ability of broadband providers to put the network to innovative uses may reduce the rate of improvements to network infrastructure.²⁶

²⁰ See, e.g., Skype Reply at 14; SONY Reply at 6; MetroPCS Comments at 16 (the Internet "is the model of the virtuous cycle: innovators are creating content and application products that consumers desire, which drives consumers to purchase from service and equipment providers, which in turn drives investment in infrastructure and new technology in response to consumer demand"); see also Clearwire Comments at 7; Google Comments at 5–8, 17; OIC Comments at 23–27; Letter from Access Humboldt et al., to Chairman Genachowski et al., GN Docket No. 09-191 (filed Dec. 1, 2010) at 1–2 (asserting that the "best way to promote broadband adoption is through programs that result in a new generation of content creators and innovators," and urging Commission "to protect our local economies [and] community-based innovation" through open Internet rules).

²¹ We note that broadband providers can also be edge providers. See *infra* para. 20.

²² See, e.g., Comcast Comments at 2, 8; MetroPCS Comments at 16; SONY Comments at 5; Qwest Comments, Factual Record Appendix at 6–10; Bright House Networks PN Comments at 7.

²³ For example, the increasing availability of multimedia applications on the World Wide Web during the 1990s was one factor that helped create demand for residential broadband services. Internet service providers responded by adopting new network infrastructure, modem technologies, and network protocols, and marketed broadband to residential customers. See, e.g., WCB Letter 12/13/10, Attach. at 250–72, Chetan Sharma, *Managing Growth and Profits in the Yottabyte Era* (2009), www.chetansharma.com/yottabyteera.htm (Yottabyte). By the late 1990s, a residential end user could download content at speeds not achievable even on the Internet backbone during the 1980s. See, e.g., WCB Letter 12/13/10, Attach. at 226–32, Susan Harris & Elise Gerich, *The NSFNET Backbone Service: Chronicling the End of an Era*, 10 CONNEXIONS (April 1996), available at www.merit.edu/networkresearch/projecthistory/nsfnet/nsfnet_article.php. Higher speeds and broadband's "always on" capability, in turn, stimulated more innovation in applications, from gaming to video streaming, which in turn encouraged broadband providers to increase network speeds. WCB Letter 12/13/10, Attach. at 233–34, Link Hoewing, *Twitter, Broadband and Innovation*, POLICYBLOG, Dec. 4, 2010, policyblog.verizon.com/BlogPost/626/TwitterBroadbandandInnovation.aspx.

²⁴ See, e.g., OIC Comments at 34; Vonage Comments at 2.

²⁵ See, e.g., Google Comments at 34–36; Public Interest Commenters (PIC) Comments at 28–30; see also WCB Letter 12/10/10, Attach. at 81–130, Joseph Farrell & Philip J. Weiser, *Modularity, Vertical Integration, and Open Access Policies: Toward a Convergence of Antitrust and Regulation in the Internet Age*, 17 HARV. J. L. & TECH. 85, 95 (2003) (an open industry architecture "can facilitate innovation in individual components, spur market entry, and result in lower prices").

²⁶ See *infra* para. 40. Cf. Part III.G.

15. Openness also is essential to the Internet's role as a platform for speech and civic engagement.²⁷ An informed electorate is critical to the health of a functioning democracy,²⁸ and Congress has recognized that the Internet "offer[s] a forum for a true diversity of political discourse, unique opportunities for cultural development, and myriad avenues for intellectual activity."²⁹ Due to the lack of gatekeeper control, the Internet has become a major source of news and information, which forms the basis for informed civic discourse.³⁰ Many Americans now turn to the Internet to obtain news,³¹ and its openness makes it an unrivaled forum for free expression. Furthermore, local, state, and federal government agencies are increasingly using the Internet to communicate with the public, including to provide information about and deliver essential services.³²

16. Television and radio broadcasters now provide news and other information online via their own websites, online aggregation websites such as Hulu,³³ and social networking platforms.³⁴ Local broadcasters are experimenting with new approaches to delivering original

²⁷ See, e.g., OIC Comments at ii; PIA Comments at 4–6; Vonage Comments at 1–2.

²⁸ See *Buckley v. Valeo*, 424 U.S. 1, 49 n.55 (1976).

²⁹ 47 U.S.C. § 230(a)(3); see also *Reno v. ACLU*, 521 U.S. 844, 853 (1997) ("No single organization controls any membership in the Web, nor is there any single centralized point from which individual Web sites or services can be blocked from the Web.") (citation omitted).

³⁰ Cf. *Turner Broad. Sys. v. FCC*, 512 U.S. 622, 648, 663–64 (1994) (discussing value of "diverse and antagonistic" sources of information).

³¹ See WCB Letter 12/10/10, Attach. at 133–41, PEW RESEARCH CTR. FOR PEOPLE AND THE PRESS, AMERICANS SPEND MORE TIME FOLLOWING THE NEWS; IDEOLOGICAL NEWS SOURCES: WHO WATCHES AND WHY 17, 22 (Sept. 12, 2010), people-press.org/report/652/ (stating that "44% of Americans say they got news through one or more internet or mobile digital source yesterday"); WCB Letter 12/10/10, Attach. at 131–32, TVB LOCAL MEDIA MARKETING SOLUTIONS, LOCAL NEWS: LOCAL TV STATIONS ARE THE TOP DAILY NEWS SOURCE, www.tvb.org/planning_buying/120562 (estimating that 61% of Americans get news from the Internet) ("TVB"). However, according to the Pew Project for Excellence in Journalism, the majority of news that people access online originates from legacy media. See PEW PROJECT FOR EXCELLENCE IN JOURNALISM, THE STATE OF THE NEWS MEDIA: AN ANNUAL REPORT ON AMERICAN JOURNALISM (2010), www.stateofthemediamedia.org/2010/overview_key_findings.php ("Of news sites with half a million visitors a month (or the top 199 news sites once consulting, government and information data bases are removed), 67% are from legacy media, most of them (48%) newspapers.").

³² See, e.g., Google Comments at 9; OIC Comments at 2; Letter from Emily Sheketoft to Comm'r Copps, FCC, GN Docket No. 09-191, Attach. at 5 (filed Aug. 13, 2010); see also *Open Internet NPRM*, 24 FCC Rcd at 13095–96, paras. 75–76; National Broadband Plan at 317–28.

³³ WCB Letter 12/13/10, Attach. at 240–43, Hulu, *Media Info*, www.hulu.com/about; WCB Letter 12/13/10, Attach. at 244–45, Hulu, *News and Information*, www.hulu.com/channels/News-and-Information#kind=shows&sort=popular_today. Hulu aggregates television programs and is a joint venture of Providence Equity Partners and Disney, NBC Universal, and News Corp, which operate the ABC, NBC, and Fox broadcast networks, respectively. See Hulu, *Media Info*, www.hulu.com/about.

³⁴ See AT&T Comments at 81; Telecom Manufacturer Coalition Comments at 7; Metro PCS Comments at 12; Motorola Comments at 5; Motion Picture Association of America (MPAA) Comments at 5–6; Vonage Comments at 13–14; National Cable and Telecommunications Association (NCTA) PN Reply at 2; Traci Patterson, CEDMAGAZINE.COM, *Fox offers Web VOD play to broadcast affiliates* (Mar. 1, 2007), www.cedmagazine.com/fox-offers-web-vod-play-to-broadcast.aspx; WCB Letter 12/10/10, Attach. at 17–71, Radio Television Digital News Association May 10, 2010 Comments, GN Docket No. 10-25, at 6–9 (RTDNA 10-25 Comments); see also sources cited *infra*, note 35. We use the term "broadcasters" to refer to broadcast networks as well as local stations, many of which air broadcast television network

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content, for example by creating neighborhood-focused websites; delivering news clips via online video programming aggregators, including AOL and Google's YouTube; and offering news from citizen journalists.³⁵ In addition, broadcast networks license their full-length entertainment programs for downloading or streaming to edge providers such as Netflix and Apple.³⁶ Because these sites are becoming increasingly popular with the public,³⁷ online distribution has a strategic value for broadcasters,³⁸ and is likely to provide an increasingly important source of funding for broadcast news and entertainment programming.³⁹

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programming. The major English- and Spanish-language television broadcast networks own approximately 130 local stations serving a substantial portion of the nation's population. See WCB Letter 12/10/10, Attach. at 278–86, Paige Albiniak, *B&C's Top 25 Station Groups 2010*, BROADCASTING & CABLE (Apr. 12, 2010), www.broadcastingcable.com/article/451325-B_C_s_Top_25_Station_Groups_2010.php.

³⁵ See WCB Letter 12/10/10, Attach. at 3–4, Press Release, PR Newswire, Raycom and Datasphere to Launch Hundreds of Neighborhood Websites in 35 Cities Across the U.S. (Mar. 3, 2010), available at www.prnewswire.com/news-releases/raycom-and-datasphere-to-launch-hundreds-of-neighborhood-websites-in-35-cities-across-the-us-86187412.html; WCB Letter 12/10/10, Attach. at 5–12, Erik Schonfeld, *Syndicaster Adds AOL, Brightcove, and YouTube Distribution for Local TV News Clips*, TECHCRUNCH, Apr. 14, 2009, techcrunch.com/2009/04/14/syndicaster-adds-aol-brightcove-and-youtube-distribution-for-local-tv-news-clips; WCB Letter 12/10/10, Attach. at 72–73, Press Release, Broadcast Interactive Media, Belo Corp Launches YouNews™ Social Media Platform on 16 Websites (Jan. 20, 2010), available at www.broadcast-interactive.com/news/82170542.html; RTDNA 10-25 Comments at 6–7.

³⁶ See WCB Letter 12/13/10, Attach. at 90–92, Stephen Cavendish, *How to Drop the Box (and Survive)*, CHICAGO TRIBUNE, Sept. 30, 2010, at C1; WCB Letter 12/10/10, Attach. at 77–78, Claire Atkinson, *Primetime Netflix*, N.Y. POST, Dec. 2, 2010, www.nypost.com/p/news/business/primetime_netflix_OMIP3b4KmH8odXiLSickCN; WCB Letter 12/13/10, Attach. at 83–85, Paul Bond, *Studios Lick Their Lips Over New-Look Netflix*, REUTERS, Aug. 16, 2010, www.reuters.com/article/idUSTRE6792T920100816.

³⁷ Motorola Comments at 5; MPAA Comments at 5–6; see also WCB Letter 12/10/10, Attach. at 79–81, Press Release, comScore, Inc., ComScore Releases October 2010 U.S. Online Video Rankings (Nov. 1, 2010), available at www.comscore.com/Press_Events/Press_Releases/2010/11/comScore_Releases_October_2010_U.S._Online_Video_Rankings (showing Hulu and broadcast networks in the top ten online video sources ranked by unique users and advertisements viewed); WCB Letter 12/13/10, Attach. at 316–19, Jed Williams, *Roku's Channel Store Brings OTT Option to Local TV*, BIA KELSEY (Dec. 1, 2010), www.blog.bia.com/bia/2010/12/01/roku-channel-store-brings-ott-option-to-local-tv/ (discussing consumers' interest in viewing local television online).

³⁸ WCB Letter 12/10/10, Attach. at 13–16, Diana Marszalek, *TV & Papers Ramp Up Similar Strategies*, NETNEWSCHECK, Sept. 13, 2010, www.netnewscheck.com/article/2010/09/13/5774/tv--papers-ramp-up-similar-strategies; WCB Letter 12/13/10, Attach. at 86–88, Bridget Carey & Glenn Garvin, *Showtime for Univision*, THE MIAMI HERALD, Oct. 18, 2010, at G14.

³⁹ See WCB Letter 12/10/10, Attach. at 84–117, BORRELL ASSOCIATES INC., BENCHMARKING: TV WEB SALES DEFY GRAVITY, GAIN 10%; TV WEB REVENUES & ONLINE AD SPENDING PROJECTIONS FOR 211 MARKETS (Apr. 2010) at 5, 7 www.tvb.org/media/file/TVB_FF_TV_Basics.pdf (online revenues projected to increase 21% between 2009 and 2010); WCB Letter 12/10/10, Attach. at 118–20, Press Release, BIA/Kelsey, BIA/Kesley Raises Its Outlook for Television Station Revenues in 2010, as Industry Benefits from Primary Elections and Advertisers Returning to Local TV (June 20, 2010), available at www.bia.com/pr100630-IITV2.asp (estimating 25% growth in television stations' online revenues between 2009 and 2010); WCB Letter 12/13/10, Attach. at 293–97, Brian Steinberg, *Fox to Use Hulu Inventory for Advertisers 'Make-Goods'*, ADVERTISING AGE, Nov. 23, 2010, www.adage.com/mediaworks/article?article_id=147256 (discussing the sale of advertising time based on

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17. Unimpeded access to Internet distribution likewise has allowed new video content creators to create and disseminate programs without first securing distribution from broadcasters and multichannel video programming distributors (MVPDs) such as cable and satellite television companies.⁴⁰ Online viewing of video programming content is growing rapidly.⁴¹

18. In the *Open Internet NPRM*, the Commission sought comment on possible implications that the proposed rules might have “on efforts to close the digital divide and encourage robust broadband adoption and participation in the Internet community by minorities and other socially and economically disadvantaged groups.”⁴² As we noted in the *Open Internet NPRM*, according to a 2009 study, broadband adoption varies significantly across demographic groups.⁴³ We expect that open Internet protections will help close the digital divide by

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TV networks’ combined television and online viewership). Americans rely heavily on broadcast television and radio for news, *see TVB, supra* note 31 (on a typical day 78% of Americans get news from a local TV station, 73% from a broadcast network, and 54% from a radio news program), and broadcast network programming, as the most-watched programming on TV, is highly valuable as a source of funding for networks and local affiliates alike. WCB Letter 12/10/10, Attach. at 1–19, TELEVISION BUREAU OF ADVERTISING, INC., TV BASICS 11 (updated Oct. 2010), www.tvb.org/media/file/TVB_FF_TV_Basics.pdf, www.tvb.org/facts_and_figures/95487 (broadcast networks aired 98 of the 100 top-rated shows in the 2009–2010 season).

⁴⁰ See MPAA PN Reply at 7; WCB Letter 12/13/10, Attach. at 326–623, FCC Open Internet Workshop: Speech, Democratic Engagement, and the Open Internet, Dec. 15, 2009 (“Dec. 15, 2009 Workshop Tr.”), video available at www.openinternet.gov/workshops/speech-democratic-engagement-and-the-open-internet.html; Dec. 15, 2009 Workshop Tr. at 52–60 (remarks of Ruth Livier, YLSE); WCB Letter 12/13/10, Attach. at 322–25, Ylse, www.ylse.net/about (distributing studio-quality videos online); Dec. 15, 2009 Workshop Tr. at 40–43 (remarks of Jonathan Moore, Rowdy Orbit IPTV, LLC); WCB Letter 12/13/10, Attach. at 320–21, Rowdy Orbit, www.rowdyorbit.com (aggregating shows not carried on cable or broadcast television), *See also* Writer’s Guild of America, West (WGAW) Reply at 5 (open Internet necessary to promote content competition and diversity); Independent Film & Television Alliance (IFTA) PN Comments at 1–2 (same); Writer’s Guild of America, East (WGAE) PN Comments at 1–2 (same).

⁴¹ See Google Comments at 28; Motorola Comments at 5; MPAA Comments at 5–6; DISH Reply at 4–5; WCB Letter 12/10/10, Attach. at 22–23, *Online Video Goes Mainstream*, EMARKETER, Apr. 28, 2010, www.emarketer.com/Article.aspx?R=1007664 (estimating that 29% of Internet users younger than 25 say they watch all or most of their TV online, that as of April 2010 67% of U.S. Internet users watch online video each month, and that this figure will increase to 77% by 2014); WCB Letter 12/10/10, Attach. at 20–21, Chris Nuttall, *Web TVs bigger for manufacturers than 3D*, FINANCIAL TIMES, Aug. 29, 2010, www.ft.com/cms/s/2/0b34043a-9fe3-11df-8cc5-00144feabdc0.html (stating that 28 million Internet-enabled TV sets are expected to be sold in 2010, an increase of 125% from 2009); WCB Letter 12/13/10, Attach. at 291–92, Sandvine, News and Events: Press Releases, www.sandvine.com/news/pr_detail.asp?ID=288 (estimating that Netflix represents more than 20% of peak downstream Internet traffic). Cisco expects online viewing to exert significant influence on future demand for broadband capacity, ranking as the top source of Internet traffic by the end of 2010 and accounting for 91% of global Internet traffic by 2014. WCB Letter 12/10/10, Attach. at 40–42, Press Release, Cisco, Annual Cisco Visual Networking Index Forecast Projects Global IP Traffic To Increase More than Fourfold by 2014 (June 10, 2010), www.cisco.com/web/MT/news/10/news_100610.html.

⁴² *Open Internet NPRM*, 24 FCC Rcd at 13098, para. 82.

⁴³ See PEW INTERNET & AM. LIFE PROJECT, HOME BROADBAND ADOPTION (June 2009). Approximately 14 to 24 million Americans remain without broadband access capable of meeting the requirements set forth in section 706 of the Telecommunications Act of 1996, as amended. *Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, and*

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maintaining relatively low barriers to entry for underrepresented groups and allowing for the development of diverse content, applications, and services.⁴⁴

19. For all of these reasons, there is little dispute in this proceeding that the Internet should continue as an open platform.⁴⁵ Accordingly, we consider below whether we can be confident that the openness of the Internet will be self-perpetuating, or whether there are threats to openness that the Commission can effectively mitigate.

B. Broadband Providers Have the Incentive and Ability to Limit Internet Openness

20. For purposes of our analysis, we consider three types of Internet activities: providing broadband Internet access service; providing content, applications, services, and devices accessed over or connected to broadband Internet access service (“edge” products and services); and subscribing to a broadband Internet access service that allows access to edge products and services. These activities are not mutually exclusive. For example, individuals who generate and share content such as personal blogs or Facebook pages are both end users and edge providers, and a single firm could both provide broadband Internet access service and be an edge provider, as with a broadband provider that offers online video content. Nevertheless, this basic taxonomy provides a useful model for evaluating the risk and magnitude of harms from loss of openness.

21. The record in this proceeding reveals that broadband providers potentially face at least three types of incentives to reduce the current openness of the Internet. *First*, broadband providers may have economic incentives to block or otherwise disadvantage specific edge providers or classes of edge providers, for example by controlling the transmission of network traffic over a broadband connection, including the price and quality of access to end users. A broadband provider might use this power to benefit its own or affiliated offerings at the expense of unaffiliated offerings.⁴⁶

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Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996, as Amended by the Broadband Data Improvement Act et al., Sixth Broadband Deployment Report, 25 FCC Rcd 9556, 9557, para. 1 (2010) (*Sixth Broadband Deployment Report*).

⁴⁴ For example, Jonathan Moore founded Rowdy Orbit IPTV, an online platform featuring original programming for minority audiences, because he was frustrated by the lack of representation of people of color in traditional media. Dec. 15, 2009 Workshop Tr. at 39–40, *video available at* www.openinternet.gov/workshops/speech-democratic-engagement-and-the-open-internet.html. The Internet’s openness—and the low costs of online entry—enables businesses like Rowdy Orbit to launch without having to gain approval from traditional media gatekeepers. *Id.* We will closely monitor the effects of the open Internet rules we adopt today on the digital divide and on minority and disadvantaged consumers. *See generally* ColorOfChange Comments; Dec. 15, 2009 Workshop Tr. at 52–60 (remarks of Ruth Livier, YLSE); 100 Black Men of America et al. Comments at 1–2; Free Press Comments at 134–36; Center for Media Justice et al. Comments at 7–9.

⁴⁵ *See, e.g.*, Letter from Alan Davidson, Google, & Thomas J. Tauke, Verizon, to Chairman Genachowski et al., GN Docket No. 09-191 at 2 (filed Jan. 14, 2010) (“It is essential that the Internet remains an unrestricted and open platform, where people can access the lawful content, services, and applications of their choice.”); Verizon Comments at 1 (“Everyone agrees the Internet should be open”); Comcast Reply at i (noting the “near-universal acceptance that . . . the Internet must remain an unrestricted and open platform”).

⁴⁶ *See, e.g.*, DISH Comments at 2 (“Vertically-integrated broadband providers have the incentive and ability to discriminate against competitors.”); Google Comments at 35 (“Broadband providers will have a
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22. Today, broadband providers have incentives to interfere with the operation of third-party Internet-based services that compete with the providers' revenue-generating telephony and/or pay-television services. This situation contrasts with the first decade of the public Internet, when dial-up was the primary form of consumer Internet access. Independent companies such as America Online, CompuServe, and Prodigy provided access to the Internet over telephone companies' phone lines. As broadband has replaced dial-up, however, telephone and cable companies have become the major providers of Internet access service.⁴⁷ Online content, applications, and services available from edge providers over broadband increasingly offer actual or potential competitive alternatives to broadband providers' own voice and video services, which generate substantial profits. Interconnected Voice-over-Internet-Protocol (VoIP) services, which include some over-the-top VoIP services,⁴⁸ "are increasingly being used as a substitute for traditional telephone service,"⁴⁹ and over-the-top VoIP services represent a significant share of

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natural incentive to use prioritization to favor their own services."); *see also* The Ad Hoc Telecommunications Users Committee (Ad Hoc) Comments at 8–9; ALA Comments at 2; Free Press Comments at 3–4, 22–23; IFTA Comments at 10–12; Netflix Comments at 3, 5; Skype Comments at 2, 10–11; Vonage Comments at 19; Google Reply at 16–17; Vonage Reply at 4.

⁴⁷ *See* WIRELINE COMPETITION BUREAU, FCC, HIGH-SPEED SERVICES FOR INTERNET ACCESS 3 (July 2009), available at hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-292191A1.pdf; WCB Letter 12/10/10, Attach. at 43–44, Press Release, Leichtman Research Group, Under 350,000 add Broadband in the Second Quarter of 2010: Top Telephone Companies Report a Cumulative Net Loss of Broadband Subscribers (Aug. 11, 2010), available at www.leichtmanresearch.com/press/081110release.html (reporting that the nineteen largest providers of broadband Internet access service in the U.S. are all cable and telephone companies and serve approximately 73.5 million subscribers, or approximately 93% of all broadband subscribers).

⁴⁸ The Commission's rules define interconnected VoIP as "a service that: (1) enables real-time, two-way voice communications; (2) requires a broadband connection from the user's location; (3) requires Internet protocol-compatible customer premises equipment (CPE); and (4) permits users generally to receive calls that originate on the public switched telephone network and to terminate calls to the public switched telephone network." 47 C.F.R. § 9.3. Over-the-top VoIP services require the end user to obtain broadband transmission from a third-party provider, and providers of over-the-top VoIP can vary in terms of the extent to which they rely on their own facilities. *See SBC Commc'ns Inc. and AT&T Corp. Applications for Approval of Transfer of Control*, WC Docket No. 05-65, Memorandum Opinion and Order, 20 FCC Rcd 18290, 18337-38, para. 86 (2005).

⁴⁹ *Tel. Number Requirements for IP-Enabled Servs. Providers*, Report and Order, Declaratory Ruling, Order on Remand, and NPRM, 22 FCC Rcd 19531, 19547, para. 28 (2007); *see also* Vonage Comments at 3–4. In merger reviews and forbearance petitions, the Commission has found the record "inconclusive regarding the extent to which various over-the-top VoIP services should be included in the relevant product market for [mass market] local services." *See, e.g., Verizon Commc'ns Inc. and MCI, Inc. Application for Approval of Transfer of Control*, Memorandum Opinion and Order, 20 FCC Rcd 18433, 18480, para. 89 (2005); *see also* *Petition of Qwest Corp. for Forbearance Pursuant to 47 U.S.C. § 160(c) in the Phoenix, Arizona Metropolitan Statistical Area*, Memorandum Opinion and Order, 25 FCC Rcd 8622, 8650, para. 54 (2010) (*Qwest Phoenix Order*). In contrast to those proceedings, we are not performing a market power analysis in this proceeding, so we need not and do not here determine with specificity whether, and to what extent, particular over-the-top VoIP services constrain particular practices and/or rates of services governed by section 201. *Cf. Qwest Phoenix Order*, 25 FCC Rcd at 8647–48, paras. 46–47 (discussing the general approach to product market definition); *id.* at 8651–52, paras. 55–56 (discussing the need for evidence that one service constrains the price of another service to include them in the same product market for purposes of a market power analysis).

voice-calling minutes, especially for international calls.⁵⁰ Online video is rapidly growing in popularity,⁵¹ and MVPDs have responded to this trend by enabling their video subscribers to use the Internet to view their programming on personal computers and other Internet-enabled devices.⁵² Online video aggregators such as Netflix, Hulu, YouTube, and iTunes that are unaffiliated with traditional MVPDs continue to proliferate and innovate, offering movies and television programs (including broadcast programming) on demand, and earning revenues from advertising and/or subscriptions.⁵³ Several MVPDs have stated publicly that they view these services as a potential competitive threat to their core video subscription service.⁵⁴ Thus, online edge services appear likely to continue gaining subscribers and market significance,⁵⁵ which will

⁵⁰ See, e.g., WCB Letter 12/10/10, Attach. at 45–52, PriMetrica, Inc., Executive Summary to TeleGeography Report 6–7 (2009), available at telecomblogs.in/wp-content/uploads/2010/05/TG10_Exec_Sum.pdf (“In the span of 6 years, Skype [an over-the-top VoIP provider] has emerged as the largest provider of cross-border communications in the world, by far. . . . Given these immense traffic volumes, it’s difficult not to conclude that at least some of Skype’s growth is coming at the expense of traditional carriers.”).

⁵¹ See *supra* para. 17.

⁵² See, e.g., WCB Letter 12/10/10, Attach. at 54–56, Press Release, Comcast Corp., Time Warner Inc. Announces Widespread Distribution of Cable TV Content Online, (June 24, 2009), available at www.comcast.com/About/PressRelease/PressReleaseDetail.aspx?PRID=883 (announcing a partnership between Comcast and Time Warner to develop a “TV Everywhere” model for the MVPD industry); see also WCB Letter 12/13/10, Attach. at 247–49, John Moulding, *TV Everywhere: More than One Authentication Model*, VIDEONET, Nov. 16, 2010, www.v-net.tv/NewsDisplay.aspx?id=594&title=tv-everywhere-more-than-one-aggregation-model; DISH Reply at 5–8 (noting that AT&T, Cablevision, Comcast, DirecTV, Dish, Time Warner Cable, and Verizon all offer online video services, but that unlike their competitors, neither DirecTV nor Dish are vertically integrated with broadband providers).

⁵³ See *supra* para. 16.

⁵⁴ E.g., AT&T PN Comments at 55–56 and 56, n.115 (wireless providers permit the use of Hulu, YouTube, and other applications that “compete with their video services”); *Annual Assessment of the Status of Competition in the Market for the Delivery of Video Programming*, Supplemental Notice of Inquiry, 24 FCC Rcd 4401, 4417 n.82 (2009) (noting that in 2009, TWC President and CEO Glenn Britt stated that “the reality is we are starting to see the beginnings of cord cutting where people, particularly young people, are saying all I need is broadband, I don’t need video”); WCB Letter 12/13/10, Attach. at 89, TWC, *Caution Concerning Forward-Looking Statements* (Aug. 2010), www.timewarnercable.com/Corporate/investor_relations/caution_forward_statements.html (“companies that deliver programming over broadband Internet connections” identified as a source of “increased competition”); WCB Letter 12/13/10, Attach. at 93–189, DirecTV, Inc. SEC Form 10-K, filed Feb. 26, 2010, at 11 (stating that “we face substantial competition in the MVPD industry from emerging digital media distribution providers” and listing Hulu, Apple, AOL, Amazon, and Netflix among its “Video via the Internet” competitors); WCB Letter 12/13/10, Attach. at 1–13, Transcript, Discussion with Ivan G. Seidenberg, Chairman and Chief Executive Officer, Verizon Communications, Inc., Goldman Sachs 19th Annual Communicopia Conference, Sept. 23, 2010 at 8, 11, available at investor.verizon.com/news/20100923; see also OIC Comments at 15.

⁵⁵ See, e.g., WCB Letter 12/10/10, Attach. at 5763, Ryan Fleming, *New Report Shows More People Dropping Cable TV for Web Broadcasts*, DIGITAL TRENDS, Apr. 16, 2010, available at www.digitaltrends.com/computing/new-report-shows-that-more-and-more-people-are-dropping-cable-tv-in-favor-of-web-broadcasts. Congress recently recognized these developments by expanding disabilities access requirements to include advanced communications services. See Twenty-First Century Communications and Video Accessibility Act, Pub. L. No. 111-260; see also 156 CONG. REC. 6005 (daily ed. July 26, 2010) (remarks of Rep. Waxman) (this legislation before us . . . ensur[es] that Americans with disabilities can access the latest communications technology.); *id.* at 6004 (remarks of Rep. Markey) (continued....)

put additional competitive pressure on broadband providers' own services.⁵⁶ By interfering with the transmission of third parties' Internet-based services or raising the cost of online delivery for particular edge providers, telephone and cable companies can make those services less attractive to subscribers in comparison to their own offerings.⁵⁷

23. In addition, a broadband provider may act to benefit edge providers that have paid it to exclude rivals (for example, if one online video site were to contract with a broadband provider to deny a rival video site access to the broadband provider's subscribers).⁵⁸ End users would be harmed by the inability to access desired content, and this conduct could lead to reduced innovation and fewer new services.⁵⁹ Consistent with these concerns, delivery networks that are vertically integrated with content providers, including some MVPDs, have incentives to favor their own affiliated content.⁶⁰ If broadband providers had historically favored their own

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("[T]he bill we are considering today significantly increases accessibility for Americans with disabilities to the indispensable telecommunications . . . tools of the 21st century."); Letter from Rick Chessen, NCTA, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 09-191 at 2 n.6 (filed Dec. 10, 2010).

⁵⁶ See, e.g., Vonage Comments at 3-4; WCB Letter 12/10/10, Attach. at 64-102, MICHAEL D. PELCOVITS AND DANIEL E. HAAR, MICRA, CONSUMER BENEFITS FROM CABLE-TELCO COMPETITION 15-16, 21 (2007), available at www.micradc.com/news/publications/pdfs/Updated_MiCRA_Report_FINAL.pdf (finding "compelling evidence" that telephone companies face increasing competition from over-the-top VoIP offerings and estimating that over the next five years consumers will save over \$6 billion from the lower prices offered by these services as well as billions more from the competitive response of the telephone incumbents).

⁵⁷ See, e.g., DISH Comments at 3-5; Google Comments at 35.

⁵⁸ See, e.g., Free Press Comments at 3.

⁵⁹ See generally WCB Letter 12/10/10, Attach. at 23-27, Steven C. Salop & David Scheffman, *Raising Rivals' Cost*, 73 AM. ECON. REV. 267-71 (1983); WCB Letter 12/10/10, Attach. at 1-23, Steven C. Salop & Thomas Krattenmaker, *Anticompetitive Exclusion: Raising Rivals' Costs to Achieve Power over Price*, 96 YALE L.J. 214 (1986). See also Andrew I. Gavil et al., ANTITRUST LAW IN PERSPECTIVE: CASES, CONCEPTS AND PROBLEMS IN COMPETITION POLICY 1153-92 (2d ed. 2008) (describing how policies fostering competition spur innovation). To similar effect, a broadband provider may raise access fees to disfavored edge providers, reducing their ability to profit by raising their costs and limiting their ability to compete with favored edge providers.

⁶⁰ See Google Comments at 30-31; Netflix Comments at 7 n.10; Vonage Reply at 4; WCB Letter 12/10/10, Attach. at 28-78, Austan Goolsbee, *Vertical Integration and the Market for Broadcast and Cable Television Programming*, Paper for the Federal Communications Commission 31-32 (Sept. 5, 2007) (Goolsbee Study) (finding that MVPDs excluded networks that were rivals of affiliated channels for anticompetitive reasons). Cf. WCB Letter 12/10/10, Attach. at 85-87, DAVID WATERMAN & ANDREW WEISS, VERTICAL INTEGRATION IN CABLE TELEVISION 142-143 (1997) (MVPD exclusion of unaffiliated content during an earlier time period); see also H.R. Rep. 102-628 (2d Sess.) at 41 (1992) ("The Committee received testimony that vertically integrated companies reduce diversity in programming by threatening the viability of rival cable programming services."). See *infra* Part II.C for other examples of broadband providers blocking access to content and services that pose an actual or potential competitive threat. In addition to the examples of actual misconduct that we provide, see *infra* Part II.C, the Goolsbee Study provides empirical evidence that cable providers have acted in the past on anticompetitive incentives to foreclose rivals, supporting our concern that these and other broadband providers would act on analogous incentives in the future. We thus disagree that we rely on "speculative harms alone" or have failed to adduce "empirical evidence." Baker Statement at *1, *4 (citing AT&T Reply Exh. 2 at 45 (J. Gregory Sidak & David J. Teece, *Innovation Spillovers and the "Dirt Road" Fallacy: The Intellectual Bankruptcy of Banning Optional Transactions for Enhanced Delivery over the Internet*, 6 J. COMPETITION L. & ECON. (continued....)

affiliated businesses or those incumbent firms that paid for advantageous access to end users, some innovative edge providers that have today become major Internet businesses might not have been able to survive.⁶¹

24. *Second*, broadband providers may have incentives to increase revenues by charging edge providers, who already pay for their own connections to the Internet,⁶² for access or prioritized access to end users.⁶³ Although broadband providers have not historically imposed such fees, they have argued they should be permitted to do so.⁶⁴ A broadband provider could force edge providers to pay inefficiently high fees because that broadband provider is typically an edge provider's only option for reaching a particular end user.⁶⁵ Thus broadband providers have the ability to act as gatekeepers.⁶⁶

25. Broadband providers would be expected to set inefficiently high fees to edge providers because they receive the benefits of those fees but are unlikely to fully account for the detrimental impact on edge providers' ability and incentive to innovate and invest, including the possibility that some edge providers might exit or decline to enter the market.⁶⁷ The unaccounted-

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521, 571-72 (2010)). To the contrary, the empirical evidence and the misconduct that we describe below validate the economic theories that inform our decision today. Moreover, as we explain below, by comparison to the benefits of the prophylactic measures we adopt, the costs associated with these open Internet rules are likely small. *See infra* para. 39.

⁶¹ *See, e.g.*, Letter from Barbara van Schewick to Marlene Dortch, Secretary, FCC, GN Docket No. 09-191 (filed Jan. 19, 2010) (van Schewick Jan. 19, 2010 *Ex Parte* Letter), Opening Statement at 4-7 (highlighting the risk that—in the absence of Internet openness norms—gatekeeper control and pay-for-prioritization would have prevented Skype and YouTube from surviving because of the threats they presented to the legacy business of telephone-based network providers and Google Video, respectively); Letter from M. Chris Riley, Free Press, to Marlene Dortch, Secretary, FCC, GN Docket No. 09-191 (filed Nov. 24, 2010), Attach., M. Chris Riley and Robb Topolski, "The Hidden Harms of Application Bias," at 3 n.7 and 7 (similar with respect to YouTube's threat to RealVideo).

⁶² *See* Free Press Comments at 17 n.8; OIC Comments at 27; Vonage Reply at 53.

⁶³ *See, e.g.*, Free Press Comments at 3; Google Comments at 34; Red Hat Comments at 2; Google Reply at 36; IPI Reply at 4; Vonage Reply at 4.

⁶⁴ *See, e.g.*, AT&T Comments at 108-137; Comcast Comments at 38-39; TWC Comments at 54-55; Verizon Comments at 71-77.

⁶⁵ Some end users can be reached through more than one broadband connection, sometimes via the same device (*e.g.*, a smartphone that has Wi-Fi and cellular connectivity). Even so, the end user, not the edge provider, chooses which broadband provider the edge provider must rely on to reach the end user.

⁶⁶ Also known as a "terminating monopolist." *See, e.g.*, CCIA Comments at 7; Skype Comments at 10-11; Vonage Comments at 9-10; Google Reply at 8-14. A broadband provider can act as a gatekeeper even if some edge providers would have bargaining power in negotiations with broadband providers over access or prioritization fees.

⁶⁷ *See* Google Comments at 35, 59-61; OIC Comments at 20-30; IPI Reply at 2; Ad Hoc Comments at 7, 15-17; ALA Comments at 2; Google Comments at 34; IFTA Comments at 14; Netflix Comments at 3-4; PAETEC Comments at 24-25; PIC Comments at 50-51; Google Reply at 37-38; IPI Reply at 4; WCB Letter 12/10/10, Attach. at 115-130, Robin S. Lee & Tim Wu, *Subsidizing Creativity through Network Design: Zero Pricing and Net Neutrality*, 23 J. ECON. PERSPECTIVES, 61-76 (2009); WCB Letter 12/13/10, Attach. at 201-225, Nicholas Economides, "Net Neutrality," *Non-Discrimination and Digital Distribution of Content Through the Internet*, 4 I/S: J.L. & POL'Y FOR INFO. SOCIETY 209, 232 (2008); WCB Letter (continued....)

for harms to innovation are negative externalities,⁶⁸ and are likely to be particularly large because of the rapid pace of Internet innovation, and wide-ranging because of the role of the Internet as a general purpose technology. Moreover, fees for access or prioritized access could trigger an “arms race” within a given edge market segment.⁶⁹ If one edge provider pays for access or prioritized access to end users, subscribers may tend to favor that provider’s services, and competing edge providers may feel that they must respond by paying, too.

26. Fees for access or prioritization to end users could reduce the potential profit that an edge provider would expect to earn from developing new offerings, and thereby reduce edge providers’ incentives to invest and innovate.⁷⁰ In the rapidly innovating edge sector, moreover, many new entrants are new or small “garage entrepreneurs,” not large and established firms. These emerging providers are particularly sensitive to barriers to innovation and entry,⁷¹ and may have difficulty obtaining financing if their offerings are subject to being blocked or disadvantaged by one or more of the major broadband providers.⁷² In addition, if edge providers need to negotiate access or prioritized access fees with broadband providers,⁷³ the resulting transaction

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12/13/10, Attach. at 14–77, Barbara van Schewick, *Towards an Economic Framework for Network Neutrality Regulation*, 5 J. ON TELECOMM. & HIGH TECH. L. 329, 378–80 (2007).

⁶⁸ A broadband provider may hesitate to impose costs on its own subscribers, but it will typically not take into account the effect that reduced edge provider investment and innovation has on the attractiveness of the Internet to end users that rely on other broadband providers—and will therefore ignore a significant fraction of the cost of foregone innovation. *See, e.g.*, OIC Comments at 20–24. If the total number of broadband subscribers shrinks, moreover, the social costs unaccounted for by the broadband provider could also include the lost ability of the remaining end users to connect with the subscribers that departed (foregone direct network effects) and a smaller potential audience for edge providers. *See, e.g., id.* at 23. Broadband providers are also unlikely to fully account for the open Internet’s power to enhance civic discourse through news and information, or for its ability to enable innovations that help address key national challenges such as education, public safety, energy efficiency, and health care. *See* ARL et al. Comments at 3; Google Reply at 39; American Recovery and Reinvestment Act of 2009, Pub. L. No. 111-5, 123 Stat. 115 (2009).

⁶⁹ *See, e.g.*, OIC Comments at 29; Google Reply at 40.

⁷⁰ *See, e.g.*, ALA Comments at 3–4; ColorOfChange Comments at 3; Free Press Comments at 69; Google Comments at 34; Netflix Comments at 4; OIC Comments at 29–30; DISH Reply at 10. Such fees could also reduce an edge provider’s incentive to invest in existing offerings, assuming the fees would be expected to increase to the extent improvements increased usage of the edge provider’s offerings.

⁷¹ Ad Hoc Comments at 15–16; ADTRAN Comments at 17–18; American Composers Forum et al. (ACF) Comments at 3–6; ColorOfChange Comments at 3–4; Debra Brown Comments at 1; Google Comments at 12; Philadelphia Comments at 3; Red Hat Comments at 2.

⁷² *See, e.g.*, Google Comments at 59–61; Union Square Ventures Comments at 1; Vonage Comments at 18; OIC Reply at 3–4.

⁷³ Negotiations impose direct expenses and delay. *See* Google Comments at 34. There may also be significant costs associated with the possibility that the negotiating parties would reach an impasse. *See* ALA Comments at 2 (“The cable TV industry offers a telling example of the ‘pay to play’ environment where some cable companies do not offer their customers access to certain content because the company has not successfully negotiated financial compensation with the content provider.”). Edge providers may also bear costs arising from their need to monitor the extent to which they actually receive prioritized delivery.

costs could further raise the costs of introducing new products and might chill entry and expansion.⁷⁴

27. Some commenters argue that an end user's ability to switch broadband providers eliminates these problems.⁷⁵ But many end users may have limited choice among broadband providers, as discussed below.⁷⁶ Moreover, those that can switch broadband providers may not benefit from switching if rival broadband providers charge edge providers similarly for access and priority transmission and prioritize each edge provider's service similarly.⁷⁷ Further, end users may not know whether charges or service levels their broadband provider is imposing on edge providers vary from those of alternative broadband providers, and even if they do have this information may find it costly to switch.⁷⁸ For these reasons, a dissatisfied end user, observing that some edge provider services are subject to low transmission quality, might not switch broadband providers (though they may switch to a rival edge provider in the hope of improving quality).

28. Some commenters contend that, in the absence of open Internet rules, broadband providers that earn substantial additional revenue by assessing access or prioritization charges on edge providers could avoid increasing or could reduce the rates they charge broadband subscribers, which might increase the number of subscribers to the broadband network.⁷⁹ Although this scenario is possible,⁸⁰ no broadband provider has stated in this proceeding that it

⁷⁴ See, e.g., Google Comments at 34–35; Shane Greenstein Notice of Ex Parte, GN Docket No. 09-191, *Transaction Cost, Transparency, and Innovation for the Internet* at 19, available at www.openinternet.gov/workshops/innovation-investment-and-the-open-internet.html; van Schewick Jan. 19, 2010 *Ex Parte* Letter, Opening Statement at 7 (arguing that the low costs of innovation not only make many more applications worth pursuing, but also allow a large and diverse group of people to become innovators, which in turn increases the overall amount and quality of innovation). There are approximately 1,500 broadband providers in the United States. See WIRELINE COMPETITION BUREAU, FCC, INTERNET ACCESS SERVICES: STATUS AS OF DECEMBER 31, 2009 at 7, tbl. 13 (Dec. 2010) (FCC Internet Status Report), available at www.fcc.gov/Daily_Releases/Daily_Business/2010/db1208/DOC-303405A1.pdf. The innovative process frequently generates a large number of attempts, only a few of which turn out to be highly successful. Given the likelihood of failure, and that financing is not always readily available to support research and development, the innovation process in many sectors of the Internet's edge is likely to be highly sensitive to the upfront costs of developing and introducing new products. PIC Comments at 50 (“[I]t is unlikely that new entrants will have the ability (both financially and with regard to information) to negotiate with every ISP that serves the markets that they are interested in.”).

⁷⁵ See, e.g., Verizon Comments at 33.

⁷⁶ See *infra* paras. 32–33.

⁷⁷ See Skype Comments at 11; see also *supra* paras. 24–25.

⁷⁸ See Skype Comments at 11–12; see also *infra* para. 34.

⁷⁹ See AT&T Comments at 114, 135–37; TWC Comments at 57–58; Verizon Comments at 47–48, 70–74.

⁸⁰ Economics literature recognizes that access charges could be harmful under some circumstances and beneficial under others. See, e.g., WCB Letter 12/10/10, Attach. at 1–62, E. Glen Weyl, *A Price Theory of Multi-Sided Platforms*, 100 AM. ECON. REV. 1642, 1642–72 (2010) (the effects of allowing broadband providers to charge terminating rates to content providers are ambiguous); see also WCB Letter 12/10/10, Attach. at 180–215, John Musacchio et al., *A Two-Sided Market Analysis of Provider Investment Incentives with an Application to the Net-Neutrality Issue*, 8 REV. OF NETWORK ECON. 22, 22–39 (2009) (noting that there are conditions under which “a zero termination price is socially beneficial”). Moreover, the economic literature on two-sided markets is at an early stage of development. AT&T Comments, Exh. 3, Schwartz Decl. at 16; Jeffrey A. Eisenach (Eisenach) Reply at 11–12; cf., e.g., WCB Letter 12/10/10, Attach. at 156– (continued...)

actually would use any revenue from edge provider charges to offset subscriber charges.⁸¹ In addition, these commenters fail to account for the likely detrimental effects of access and prioritization charges on the virtuous circle of innovation described above. Less content and fewer innovative offerings make the Internet less attractive for end users than would otherwise be the case. Consequently, we are unable to conclude that the possibility of reduced subscriber charges outweighs the risks of harm described herein.⁸²

29. *Third*, if broadband providers can profitably charge edge providers for prioritized access to end users, they will have an incentive to degrade or decline to increase the quality of the service they provide to non-prioritized traffic.⁸³ This would increase the gap in quality (such as latency in transmission) between prioritized access and non-prioritized access, induce more edge providers to pay for prioritized access, and allow broadband providers to charge higher prices for prioritized access. Even more damaging, broadband providers might withhold or decline to expand capacity in order to “squeeze” non-prioritized traffic, a strategy that would increase the likelihood of network congestion⁸⁴ and confront edge providers with a choice between accepting low-quality transmission or paying fees for prioritized access to end users.

30. Moreover, if broadband providers could block specific content, applications, services, or devices, end users and edge providers would lose the control they currently have over whether other end users and edge providers can communicate with them through the Internet. Content, application, service, and device providers (and their investors) could no longer assume that the market for their offerings included all U.S. end users. And broadband providers might choose to implement undocumented practices for traffic differentiation that undermine the ability

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79, Mark Armstrong, *Competition in Two-Sided Markets*, 37 RAND J. OF ECON. 668 (2006); WCB Letter 12/10/10, Attach. at 216–302, Jean-Charles Rochet & Jean Tirole, *Platform Competition in Two-Sided Markets*, 1 J. EUR. ECON. ASS’N 990 (2003).

⁸¹ See Google Reply at 37.

⁸² Indeed, demand for broadband Internet access service might decline even if subscriber fees fell, if the conduct of broadband providers discouraged demand by blocking end user access to preferred edge providers, slowing non-prioritized transmission, and breaking the virtuous circle of innovation.

⁸³ See e.g., ALA Comments at 2; Google Comments at 35; OIC Comments at 31; DISH Reply at 11; WCB Letter 12/10/10, Attach. at 131–55, Jon Peha, *The Benefits and Risks of Mandating Network Neutrality, and the Quest for a Balanced Policy*, 1 INTER. J. OF COMM. 644, 653 (2007). Cf. WCB Letter 12/10/10, Attach. at 89–114, Raymond J. Deneckere & R. Preston McAfee, *Damaged Goods*, 5 J. OF ECON. & MGMT. STRATEGY 149 (Summer 1996) (sellers may find it profitable to degrade the quality of their lowest tier of service); Netflix PN Comments at 3 (“The Commission should ensure that specialized services do not unreasonably erode capacity devoted to broadband Internet access services.”).

⁸⁴ See, e.g., CDT Comments at 28–29; Free Press Comments at 4, 22, 29–30, 37–43, 143–44; Google Comments at 35–36; OIC Comments at 31, 46; PIC Comments at 29–30; Free Press Reply at 38; IPI Reply at 16; Letter from Matthew F. Wood et al., Public Interest Commenters, to Marlene Dortch, Secretary, FCC, GN Docket No. 09-51, 09-191, WC Docket No. 07-52 at 3 (filed Aug. 6, 2010); Letter from S. Derek Turner, Free Press, to Chairman Genachowski et al., FCC, GN Docket No. 09-191, WC Docket No. 07-52 at 4–5 (filed Aug. 3, 2010); WCB Letter 12/10/10, Attach. at 63–88, Jay Pil Choi & Byung-Cheol Kim, *Net Neutrality and Investment Incentives*, 41 RAND J. OF ECON. 446, 464–65 (Autumn 2010) (broadband providers have an incentive to limit capacity expansion in order to charge a greater premium for priority service, though other factors may also affect investment incentives).

of developers to create generally usable applications without having to design to particular broadband providers' unique practices or business arrangements.⁸⁵

31. All of the above concerns are exacerbated by broadband providers' ability to make fine-grained distinctions in their handling of network traffic as a result of increasingly sophisticated network management tools. Such tools may be used for beneficial purposes, but they also increase broadband providers' ability to act on incentives to engage in network practices that would erode Internet openness.⁸⁶

32. Although these threats to Internet-enabled innovation, growth, and competition do not depend upon broadband providers having market power with respect to end users,⁸⁷ most would be exacerbated by such market power. A broadband provider's incentive to favor affiliated content or the content of unaffiliated firms that pay for it to do so, its incentive to block or degrade traffic or charge edge providers for access to end users, and its incentive to squeeze non-prioritized transmission will all be greater if end users are less able to respond by switching to rival broadband providers. The risk of market power is highest in markets with few competitors, and most residential end users today have only one or two choices for wireline broadband Internet access service.⁸⁸ As of December 2009, nearly 70 percent of households lived in census tracts where only one or two wireline or fixed wireless firms provided advertised download speeds of at least 3 Mbps and upload speeds of at least 768 Kbps⁸⁹—the closest observable benchmark to the minimum download speed of 4 Mbps and upload speed of 1 Mbps that the Commission has used to assess broadband deployment.⁹⁰ About 20 percent of households are in census tracts with only one provider advertising at least 3 Mbps down and 768 Kbps up.⁹¹ For Internet service with advertised download speeds of at least 10 Mbps down and upload

⁸⁵ See OIC Comments at 24; Free Press Comments at 45. The transparency and reasonable network management guidelines we adopt today, in particular, should reduce the likelihood of such fragmentation of the Internet.

⁸⁶ See CCIA/CEA Comments at 4; Free Press Comments at 29–30, 143–46; Google Comments at 32–34; Netflix Comments at 3; OIC Comments at 14, 79–82; DISH Reply at 8–9; IPI Reply at 9; Vonage Reply at 5. For examples of network management tools, see, for example, WCB Letter 12/10/10, Attach. at 1–8, Allot Service Gateway, Pushing the DPI Envelope: An Introduction, at 2 (June 2007), available at www.sysob.com/download/AllotServiceGateway.pdf (“Reduce the performance of applications with negative influence on revenues (e.g. competitive VoIP services).”); WCB Letter 12/13/10, Attach. at 289–90, ProCera Networks, PLR, www.proceranetworks.com/customproperties/tag/Products-PLR.html; WCB Letter 12/13/10, Attach. at 283–88, Cisco, www.cisco.com/en/US/prod/collateral/ps7045/ps6129/ps6133/ps6150/prod_brochure0900aecd8025258e.pdf (marketing the ability of equipment to identify VoIP, video, and other traffic types). Vendors market their offerings as enabling broadband providers to “make only modest incremental infrastructure investments and to control operating costs.” WCB Letter 12/13/10, Attach. at 283, Cisco.

⁸⁷ See *supra* paras. 24–26. Because broadband providers have the ability to act as gatekeepers even in the absence of market power with respect to end users, we need not conduct a market power analysis.

⁸⁸ See, e.g., FCC Internet Status Report at 49, tbl. 24; National Broadband Plan at 37; Google Comments at 19–20; IFTA Comments at 10–11; Netflix Comments at 5; Vonage Comments at 7–8; Broadband Institute of California (BBIC) Reply at 21; Google Reply at 3–7; IPI Reply at 14; OIC Reply at 14–15.

⁸⁹ See FCC Internet Status Report at 7, fig. 3(a). A broadband provider's presence in a census tract does not mean it offers service to all potential customers within that tract. And the data reflect subscriptions, not network capability.

⁹⁰ *Sixth Broadband Deployment Report*, 25 FCC Rcd at 9559, 9570, paras. 5, 21 (2010).

⁹¹ See FCC Internet Status Report at 7, fig. 3(a).

speeds of at least 1.5 Mbps up, nearly 60 percent of households lived in census tracts served by only one wireline or fixed wireless broadband provider, while nearly 80 percent lived in census tracts served by no more than two wireline or fixed wireless broadband providers.⁹²

33. Including mobile broadband providers does not appreciably change these numbers.⁹³ The roll-out of next generation mobile services is at an early stage, and the future of competition in residential broadband is unclear.⁹⁴ The record does not enable us to make a predictive judgment that the future will be more competitive than the past. Although wireless providers are increasingly offering faster broadband services,⁹⁵ we do not know, for example, how end users will value the trade-offs between the benefits of wireless service (e.g., mobility) and the benefits of fixed wireline service (e.g., higher download and upload speeds).⁹⁶ We note that the two largest mobile broadband providers also offer wireline or fixed service;⁹⁷ this could dampen their incentive to compete aggressively with wireline (or fixed) services.⁹⁸

34. In addition, customers may incur significant costs in switching broadband providers⁹⁹ because of early termination fees;¹⁰⁰ the inconvenience of ordering, installation, and

⁹² *Id.*

⁹³ In December 2009, nearly 60% of households lived in census tracts where no more than two broadband providers offered service with 3 Mbps down and 768 Kbps up, while no mobile broadband providers offered service with 10 Mbps down and 1.5 Mbps up. *Id.* at 8, fig. 3(b). Mobile broadband providers generally have offered bandwidths lower than those available from fixed providers. See Yottabyte at 13–14.

⁹⁴ See National Broadband Plan at 40–42. A number of commenters discuss impediments to increased competition. See, e.g., Ad Hoc Comments at 9; Google Comments, at 18–22; IFTA Comments at 10–11; see also WCB Letter 12/10/10, Attach. at 9–16, Thomas Monath et al., *Economics of Fixed Broadband Network Strategies*, 41 IEEE COMM. MAG. 132, 132–39 (Sept. 2003).

⁹⁵ National Association of Telecommunications Office & Advisors (NATOA) Comments, Attach. 5, Andrew Afflerback & Matthew DeHaven, *A Technical Strategy for Evolution*, at 31 (Jan. 13, 2010); Qualcomm Comments at 7.

⁹⁶ See *supra* note 93; Ad Hoc Comments at 9; Google Comments at 21; Vonage Comments at 8; IPI Reply at 14; WCB Letter 12/10/10, Attach. at 56–65, Vikram Chandrasekhar & Jeffrey G. Andrews, *Femtocell Networks: A Survey*, 46 IEEE COMM. MAG., Sept. 2008, 59, at 59–60 (explaining mobile spectrum alone cannot compete with wireless connections to fixed networks). We also do not know how offers by a single wireless broadband provider for both fixed and mobile broadband services will perform in the marketplace.

⁹⁷ See OIC Comments at 71–72. Large cable companies that provide fixed broadband also have substantial ownership interests in Clear, the 4G wireless venture in which Sprint has a majority ownership interest.

⁹⁸ OIC Comments at 71–72; Skype Comments at 10. In cellular telephony, multimarket conduct has been found to dampen competition. See WCB Letter 12/10/10, Attach. at 1–24, P.M. Parker and L.H. Röller, *Collusive conduct in duopolies: Multimarket contact and cross ownership in the mobile telephone industry*, 28 RAND J. OF ECON. 304, 304–322 (Summer 1997); WCB Letter 12/10/10, Attach. at 25–58, Meghan R. Busse, *Multimarket contact and price coordination in the cellular telephone industry*, 9 J. OF ECON. & MGMT. STRATEGY 287, 287–320 (Fall 2000). Moreover, some fixed broadband providers also provide necessary inputs to some mobile providers' offerings, such as backhaul transport to wireline facilities.

⁹⁹ ARL et al. Comments at 5; Google Comments at 21–22; Netflix Comments at 5; New Jersey Rate Counsel (NJRC) Comments at 17; OIC Comments at 40, 73; PIC Comments at 23; Skype Comments at 12; OIC Reply at 20–21; Paul Misener (Amazon.com) Comments at 2; see also WCB Letter 12/10/10, Attach. at 59–76, Patrick Xavier & Dimitri Ypsilanti, *Switching Costs and Consumer Behavior: Implications for Telecommunications Regulation*, 10(4) INFO 2008, 13, 13–29 (2008). Churn is a function of many factors. See, e.g., WCB Letter 12/10/10, Attach. at 1–53, 97–153, AT&T Comments, WT Docket No. 10-133, at 51 (continued....)

set-up, and associated deposits or fees;¹⁰¹ possible difficulty returning the earlier broadband provider's equipment and the cost of replacing incompatible customer-owned equipment;¹⁰² the risk of temporarily losing service; the risk of problems learning how to use the new service; and the possible loss of a provider-specific email address or website.¹⁰³

C. Broadband Providers Have Acted to Limit Openness

35. These dangers to Internet openness are not speculative or merely theoretical. Conduct of this type has already come before the Commission in enforcement proceedings. As early as 2005, a broadband provider that was a subsidiary of a telephone company paid \$15,000 to settle a Commission investigation into whether it had blocked Internet ports used for competitive VoIP applications.¹⁰⁴ In 2008, the Commission found that Comcast disrupted certain peer-to-peer (P2P) uploads of its subscribers, without a reasonable network management justification and without disclosing its actions.¹⁰⁵ Comparable practices have been observed in the provision of mobile broadband services. After entering into a contract with a company to handle online payment services, a mobile wireless provider allegedly blocked customers' attempts to use competing services to make purchases using their mobile phones.¹⁰⁶ A nationwide mobile provider restricted the types of lawful applications that could be accessed over its 3G mobile wireless network.¹⁰⁷

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(Aug. 2, 2010). The evidence in the record, *e.g.*, AT&T Comments at 83, is not probative as to the extent of competition among broadband providers because it does not appropriately isolate a connection between churn levels and the extent of competition.

¹⁰⁰ Google Comments at 21–22. Of broadband end users with a choice of broadband providers, 32% said paying termination fees to their current provider was a major reason why they have not switched service. FCC, BROADBAND DECISION: WHAT DRIVES CONSUMERS TO SWITCH—OR STICK WITH—THEIR BROADBAND INTERNET PROVIDER 8 (Dec. 2010) (FCC Internet Survey), *available at* hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-303264A1.pdf.

¹⁰¹ Google Comments at 22; NJRC Comments at 17.

¹⁰² NJRC Comments at 17.

¹⁰³ See FCC Internet Survey at 7 (finding that 34% of broadband end users with a choice of providers said giving up their current email address was a major reason for not changing service); Google Comments at 22; NJRC Comments at 17.

¹⁰⁴ See *Madison River Communications, LLC and affiliated companies*, File No. EB-05-IH-0110; Acct. No.; FRN: 0004334082, Consent Decree, 20 FCC Rcd 4295 (EB 2005) (*Madison River Consent Decree*).

¹⁰⁵ *Comcast Network Management Practices Order*, 23 FCC Rcd 13028, 13028, 13055–56, paras. 1, 47–48 (2008) (*Comcast Order*); see also WCB Letter 12/13/10, Attach. at 1–15, Comcast Corporation, Description of Current Network Management Practices, downloads.comcast.net/docs/Attachment_A_Current_Practices.pdf.

¹⁰⁶ ACLU PN Comments at 8.

¹⁰⁷ See, *e.g.*, Letter from James W. Cicconi, AT&T Services, Inc., to Ruth Milkman, Chief, Wireless Telecommunications Bureau, FCC, RM-11361, RM-11497 at 6–9 (filed Aug. 21, 2009) (“AT&T indicated to Apple that it does not object to Apple enabling VoIP applications for the iPhone that use Wi-Fi connectivity . . . rather than AT&T’s 2G or 3G wireless data services”); Sling Comments at 4–11; DISH PN Reply at 7 (“In reality, it took nine months of regulatory scrutiny and pressure from the public and DISH for AT&T to ‘work with’ DISH so that AT&T subscribers could access their Slingbox offerings over the wireless network. Other third-party application providers have experienced similar restrictions. VoIP

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36. There have been additional allegations of blocking, slowing, or degrading P2P traffic. We do not determine in this Order whether any of these practices violated open Internet principles, but we note that they have raised concerns among edge providers and end users, particularly regarding lack of transparency. For example, in May 2008 a major cable broadband provider acknowledged that it had managed the traffic of P2P services.¹⁰⁸ In July 2009, another cable broadband provider entered into a class action settlement agreement stating that it had “ceased P2P Network Management Practices,”¹⁰⁹ but allowing the provider to resume throttling P2P traffic.¹¹⁰ There is evidence that other broadband providers have engaged in similar degradation.¹¹¹ In addition, broadband providers’ terms of service commonly reserve to the provider sweeping rights to block, degrade, or favor traffic.¹¹² For example, one major cable provider reserves the right to engage, “without limitation,” in “port blocking, . . . traffic prioritization and protocol filtering.”¹¹³ Further, a major mobile broadband provider prohibits use of its wireless service for “downloading movies using peer-to-peer file sharing services” and VoIP applications.¹¹⁴ And a cable modem manufacturer recently filed a formal complaint with the Commission alleging that a major broadband Internet access service provider has violated open Internet principles through overly restrictive device approval procedures.¹¹⁵

37. These practices have occurred notwithstanding the Commission’s adoption of open Internet principles in the *Internet Policy Statement*; enforcement proceedings against Madison River Communications and Comcast for their interference with VoIP and P2P traffic,

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operators such as Skype have faced significant difficulty in gaining access across wireless Internet connections.”).

¹⁰⁸ See WCB Letter 12/10/10, Attach. at 74, Amy Schatz, *Cox About to Feel Wrath of Net Neutrality Activists*, WASHINGTON WIRE, May 15, 2008, blogs.wsj.com/washwire/2008/05/15/cox-about-to-feel-wrath-of-net-neutrality-activists.

¹⁰⁹ *Chin v. RCN Corp.*, No. 08 Civ. 7349, §3.2 (S.D.N.Y. July 31, 2009) (RCN Settlement Agreement), available at www.rcn.com/lehigh-valley/images/pdfs/legal/02-class-action-settlement-agreement.pdf.

¹¹⁰ See RCN Settlement Agreement § 3.2. RCN denied any wrongdoing, but it acknowledges that in order to ease network congestion, it targeted specific P2P applications. See Letter from Jean L. Kiddo, RCN, to Marlene Dortch, Secretary, FCC, GN Docket No. 09-191, WC Docket No. 07-52, at 2–5 (filed May 7, 2010).

¹¹¹ A 2008 study by the Max Planck Institute revealed significant blocking of BitTorrent applications in the United States. Comcast and Cox were both cited as examples of providers blocking traffic. See generally WCB Letter 12/10/10, Attach. at 75–80, MARCEL DISCHINGER ET AL., MAX PLANCK INSTITUTE, DETECTING BITTORRENT BLOCKING (2008), available at broadband.mpi-sws.org/transparency/results/08_imc_blocking.pdf; see also WCB Letter 12/13/10, Attach. at 235–39, Max Planck Institute for Software Systems, Glasnost: Results from Tests for BitTorrent Traffic Blocking, broadband.mpi-sws.org/transparency/results; WCB Letter 12/13/10, Attach. at 298–315, CHRISTIAN KREIBICH ET AL., NETALYZR: ILLUMINATING EDGE NETWORK NEUTRALITY, SECURITY, AND PERFORMANCE 15 (2010), available at www.icsi.berkeley.edu/pubs/techreports/TR-10-006.pdf.

¹¹² See generally Sandoval Reply at 43–54.

¹¹³ WCB Letter 12/10/10, Attach. at 81–92, Cox Communications, Cox High-Speed Internet Acceptable Use Policy, ww2.cox.com/aboutus/policies.cox.

¹¹⁴ WCB Letter 12/10/10, Attach. at 30–34, MetroPCS, MetroWEB Terms of Use, www.metropcs.com/products/metroweb/terms_of_use.aspx.

¹¹⁵ See *Zoom Telephonics, Inc. v. Comcast Cable Communications, LLC*, Complaint (Nov. 29, 2010).

respectively;¹¹⁶ Commission orders that required certain broadband providers to adhere to open Internet obligations;¹¹⁷ longstanding norms of Internet openness; and statements by major broadband providers that they support and are abiding by open Internet principles.¹¹⁸

D. The Benefits of Protecting the Internet's Openness Exceed the Costs

38. Widespread interference with the Internet's openness would likely slow or even break the virtuous cycle of innovation that the Internet enables, and would likely cause harms that may be irreversible or very costly to undo.¹¹⁹ For example, edge providers could make investments in reliance upon exclusive preferential arrangements with broadband providers, and network management technologies may not be easy to change.¹²⁰ If the next revolutionary technology or business is not developed because broadband provider practices chill entry and innovation by edge providers, the missed opportunity may be significant,¹²¹ and lost innovation, investment, and competition may be impossible to restore after the fact.¹²² Moreover, because of the Internet's role as a general purpose technology, erosion of Internet openness threatens to harm innovation, investment in the core and at the edge of the network, and competition in many sectors, with a disproportionate effect on small, entering, and non-commercial edge providers that drive much of the innovation on the Internet.¹²³ Although harmful practices are not certain to

¹¹⁶ See *supra* para. 35.

¹¹⁷ See *supra* note 3.

¹¹⁸ See, e.g., Qwest PN Comments at 2 ("Qwest and virtually all major broadband providers have supported the FCC Internet Policy Principles and voluntarily abide by those principles as good policy."); Letter from Kyle E. McSillarow, NCTA et al. to Julius Genachowski, Chairman, FCC et al. at 1-2 n.4 (dated Apr. 29, 2010) attached to Letter from Robert W. Quinn, Jr., AT&T, to Marlene Dortch, Secretary, FCC at Attach A. (filed April 30, 2010), ("AT&T made a commitment to abide by the FCC's Open Internet Principles when they were first formulated in 2005 and we will continue to do so."); see also CenturyLink Comments at 15; TIA Comments at ii, 3, 20-22; Comcast Reply at ii; Qwest Reply at 2-3; Shane Greenstein Notice of Ex Parte, GN Docket No. 09-191, *Transaction Cost, Transparency, and Innovation for the Internet* at 13, available at www.openinternet.gov/workshops/innovation-investment-and-the-open-internet.htm.

¹¹⁹ See CDT Reply at 6 ("Unraveling a web of discriminatory deals after significant investments have been made and business plans built would be a difficult and complicated undertaking both logistically and politically."); see also Google Comments at 29-36.

¹²⁰ As one example, Comcast's transition to a protocol-agnostic network management practice took almost nine months to complete. See Letter from Kathryn A. Zachem, V.P., Regulatory Affairs, Comcast Corp., to Marlene Dortch, Secretary, FCC, WC Docket No. 07-52 at 2 (filed July 10, 2008); Letter from Kathryn A. Zachem, V.P., Regulatory Affairs, Comcast Corp., to Marlene Dortch, Secretary, FCC, WC Docket No. 07-52 at Attach. B at 3, 9 (filed Sept. 19, 2008) (noting that the transition required "lab tests, technical trials, customer feedback, vendor evaluations, and a third-party consulting analysis," as well as trials in five markets).

¹²¹ See CDT Comments at 6; Vonage Comments at 18.

¹²² See CDT Comments at 6; Vonage Reply at 5; cf. *United States v. Microsoft Corp.*, 253 F.3d 34, 79 (D.C. Cir. 2001) (court "may infer causation where exclusionary conduct is aimed at producers of nascent competitive technologies," notwithstanding uncertainty of proof).

¹²³ See, e.g., ALA Comments at 2; IFTA Comments at 14. Even some who generally oppose open Internet rules agree that extracting access fees from entities that produce content or services without the anticipation of financial reward would have significant adverse effects. See WCB Letter 12/10/10, Attach. at 35-80, C. Scott Hemphill, *Network Neutrality and the False Promise of Zero-Price Regulation*, 25 YALE J. ON REG. 135, 161-62 (2008) ("[S]ocial production has distinctive features that make it unusually valuable, but also

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become widespread, there are powerful reasons for immediate concern, as broadband providers have interfered with the open Internet in the past and have incentives and an increasing ability to do so in the future. Effective open Internet rules can prevent or reduce the risk of these harms, while helping to assure Americans unfettered access to diverse sources of news, information, and entertainment, as well as an array of technologies and devices that enhance health, education, and the environment.

39. By comparison to the benefits of these prophylactic measures, the costs associated with the open Internet rules adopted here are likely small.¹²⁴ Broadband providers generally endorse openness norms—including the transparency and no blocking principles—as beneficial and in line with current and planned business practices (though they do not uniformly support rules making them enforceable).¹²⁵ Even to the extent rules require some additional disclosure of broadband providers' practices, the costs of compliance should be modest.¹²⁶ In addition, the high-level rules we adopt carefully balance preserving the open Internet against avoiding unduly burdensome regulation. Our rules against blocking and unreasonable discrimination are subject to reasonable network management, and our rules do not prevent broadband providers from offering specialized services such as facilities-based VoIP.¹²⁷ In short, rules that reinforce the openness that has supported the growth of the Internet, and do not substantially change this highly successful status quo, should not entail significant compliance costs.

40. Some commenters contend that open Internet rules are likely to reduce investment in broadband deployment.¹²⁸ We disagree. There is no evidence that prior open Internet obligations have discouraged investment,¹²⁹ and numerous commenters explain that, by

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unusually vulnerable, to a particular form of exclusion. That mechanism of exclusion is not subject to the prohibitions of antitrust law, moreover, presenting a relatively stronger argument for regulation.”), *cited in* Prof. Tim Wu Comments at 9 n.22.

¹²⁴ See Free Press Comments at 76.

¹²⁵ See *supra* para. 11; *infra* note 137. We note that many broadband providers are, or soon will be, subject to open Internet requirements in connection with grants under the Broadband Technology Opportunities Program (BTOP). The American Recovery and Reinvestment Act of 2009 required that nondiscrimination and network interconnection obligations be “contractual conditions” of all BTOP grants. Pub. L. No. 111-5, § 6001(j), 123 Stat. 115 (codified at 47 U.S.C. § 1305). These nondiscrimination and interconnection conditions require BTOP grantees, among other things, to adhere to the principles in the *Internet Policy Statement*; to display any network management policies in a prominent location on the service provider's website; and to offer interconnection where technically feasible.

¹²⁶ See *infra* para. 57.

¹²⁷ See *infra* Part III.G.

¹²⁸ See, e.g., TWC Comments at 33; Verizon Reply at 42–43.

¹²⁹ See, e.g., Free Press Comments at 4, 23–25; Google Comments at 38–39; XO Comments at 12. In making prior investment decisions, broadband providers could not have reasonably assumed that the Commission would abstain from regulating in this area, as the Commission's decisions classifying cable modem service and wireline broadband Internet access service as information services included notices of proposed rulemaking seeking comment on whether the Commission should adopt rules to protect consumers. See *Appropriate Framework for Broadband Access to the Internet Over Wireline Facilities et al.*, Report and Order and NPRM, 20 FCC Rcd 14853, 14929–35, paras. 146–59 (2005); *Inquiry Concerning High-Speed Access to the Internet Over Cable & Other Facilities et al.*, Declaratory Ruling and NPRM, 17 FCC Rcd 4798, 4839–48, paras. 72–95 (2002) (seeking comment on whether the

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preserving the virtuous circle of innovation, open Internet rules will increase incentives to invest in broadband infrastructure.¹³⁰ Moreover, if permitted to deny access, or charge edge providers for prioritized access to end users, broadband providers may have incentives to allow congestion rather than invest in expanding network capacity.¹³¹ And as described in Part III, below, our rules allow broadband providers sufficient flexibility to address legitimate congestion concerns and other network management considerations. Nor is there any persuasive reason to believe that in the absence of open Internet rules broadband providers would lower charges to broadband end users,¹³² or otherwise change their practices in ways that benefit innovation, investment, competition, or end users.¹³³

41. The magnitude and character of the risks we identify make it appropriate to adopt prophylactic rules now to preserve the openness of the Internet, rather than waiting for substantial, pervasive, and potentially irreversible harms to occur before taking any action.¹³⁴ The Supreme Court has recognized that even if the Commission cannot “predict with certainty” the future course of a regulated market, it may “plan in advance of foreseeable events, instead of waiting to react to them.”¹³⁵ Moreover, as the Commission found in another context, “[e]xclusive reliance on a series of individual complaints,” without underlying rules, “would prevent the Commission from obtaining a clear picture of the evolving structure of the entire market, and addressing competitive concerns as they arise. . . . Therefore, if the Commission exclusively relied on individual complaints, it would only become aware of specific . . . problems if and when the individual complainant’s interests coincided with those of the interest of the overall ‘public.’”¹³⁶

42. Finally, we note that there is currently significant uncertainty regarding the future enforcement of open Internet principles and what constitutes appropriate network management, particularly in the wake of the court of appeals’ vacatur of the *Comcast Network Management*

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Commission should require cable operators to give unaffiliated ISPs access to broadband cable networks); see also AT&T Comments at 8 (“[T]he existing principles already address any blocking or degradation of traffic and thus eliminate any theoretical leverage providers may have to impose [unilateral ‘tolls’].”).

¹³⁰ See, e.g., CCIA/CEA Comments at 7 (“[C]odifying an open Internet access regime is the best solution for guiding existing market forces in a manner that encourages investment, innovation, and subscription.”); Clearwire Comments at 7 (“Openness is not merely an important policy issue, it is good business practice.”); Free Press Comments at 77; Google Comments at 5–8, 37–39; PAETEC Comments at 21–22; XO Comments at 3–5 (adoption of the proposed rules will increase XO’s incentive “to invest further in its broadband facilities”); CDT Reply at 9; SONY Reply at 5–6; XO Reply at 6 & n.13.

¹³¹ See *supra* para. 29.

¹³² See *supra* para. 28.

¹³³ See, e.g., IPI Comments at 11 (“[A]llowing ISPs to price discriminate does not ensure that ISPs will take the additional revenue and reinvest it back in the Internet infrastructure.”).

¹³⁴ See *Star Wireless, LLC v. FCC*, 522 F.3d 469, 475 (D.C. Cir. 2008) (finding that general bright-line prophylactic measures, such as the anti-collusion rule prohibiting collaborating with competing applicants for licenses, are appropriate when “the probability of abuse in transactions between related organizations is significant enough that it is more efficient to prevent the opportunity for abuse from arising than it is to try to detect actual incidents of abuse”); see also IPI Reply at 9; Vonage Reply at ii.

¹³⁵ *United States v. Sw. Cable Co.*, 392 U.S. 157, 176–77 (1968) (*Sw. Cable*).

¹³⁶ *Telecomms., Inc. and Liberty Media Corp.*, Applications for Consent to Transfer Control of Radio Licenses, 9 FCC Rcd 4783, 4783 para. 21 (Cab. Bur. 1994).

Practices Order. A number of commenters, including leading broadband providers, recognize the benefits of greater predictability regarding open Internet protections.¹³⁷ Broadband providers benefit from increased certainty that they can reasonably manage their networks and innovate with respect to network technologies and business models.¹³⁸ For those who communicate and innovate on the Internet,¹³⁹ and for investors in edge technologies,¹⁴⁰ there is great value in having confidence that the Internet will remain open, and that there will be a forum available to bring

¹³⁷ For example, AT&T has recognized that open Internet rules “would reduce regulatory uncertainty, and should encourage investment and innovation in next generation broadband services and technologies.” See WCB Letter 12/10/10, Attach. at 94, *AT&T Statement on Proposed FCC Rules to Preserve an Open Internet*, AT&T PUBLIC POLICY BLOG, Dec. 1, 2010, attpublicpolicy.com/government-policy/att-statement-on-proposed-fcc-rules-to-preserve-an-open-internet. Similarly, Comcast acknowledged that our proposed rules would strike “a workable balance between the needs of the marketplace and the certainty that carefully-crafted and limited rules can provide to ensure that Internet freedom and openness are preserved.” See David L. Cohen, *FCC Proposes Rules to Preserve an Open Internet*, COMCASTVOICES, Dec. 1, 2010, blog.comcast.com/2010/12/fcc-proposes-rules-to-preserve-an-open-internet.html; see also, e.g., Final Brief for Intervenor NCTA and NBC Universal, Inc. at 11–13; 19–22, *Comcast Corp. v. FCC*, 600 F.3d 642 (D.C. Cir. 2010) (No. 08-1291). In addition to broadband providers, an array of industry leaders, venture capitalists, and public interest groups have concluded that our rules will promote investment in the Internet ecosystem by removing regulatory uncertainty. See Free Press Comments at 10; Google Comments at 40; PIC Comments at 28; WCB Letter 12/10/10, Attach. at 91 (statement of CALinnovates.org), 96 (statement of Larry Cohen, president of the Communications Workers of America), 98 (statement of Ron Conway, founder of SV Angel), 99 (statement of Craig Newmark, founder of craigslist), 105 (statement of Dean Garfield, president and CEO of the Information Technology Industry Council), 111 (Dec. 8, 2010 letter from Jeremy Liew, Managing Director, Lightspeed Venture Partners to Julius Genachowski, FCC Chairman), 112 (Dec. 1, 2010 letter from Jed Katz, Managing Director, Javelin Venture Partners to Julius Genachowski, FCC Chairman), 127 (statement of Gary Shapiro, president and CEO of the Consumer Electronics Association), 128 (statement of Ram Shriram, founder of Sherpalo Ventures), 132 (statements of Rey Ramsey, President and CEO of TechNet, and John Chambers, Chairman and CEO of Cisco), 133 (statement of John Doerr, Kleiner Perkins Caufield & Byers); XO Reply at 6.

¹³⁸ See, e.g., CCIA Comments at 7–8; Google Comments at 37; OIC Comments at 34, 40; Skype Comments at 4–5, 12; Vonage Comments at 5–6; XO Comments at 4, 12, 14–15; PAETEC Comments at 8, 22–24; DISH Reply at 14; XO Reply at 5–6; Clearwire PN Comments at 2.

¹³⁹ See Dec. 15; 2009 Workshop Tr., *supra* note 40, at 31–71, 90–91, 102–07.

¹⁴⁰ See, e.g., Union Square Ventures Comments at 1 (asserting that without open Internet rules, “the businesses in which Union Square Ventures invests could be singled out and charged a different price for network access based solely on the content they transmit across the network. Such practice would be discriminatory and would endanger innovation on the Internet because it would prevent small companies with little capital from having equal access to the audience of global internet users that larger companies would be capable of accessing”); OIC Comments App. A, Letter from 28 Internet and technology leaders to Chairman Genachowski (dated October 19, 2009) (“An open Internet fuels a competitive and efficient marketplace, where consumers make the ultimate choices about which products succeed and which fail. This allows businesses of all sizes, from the smallest startup to larger corporations, to compete, yielding maximum economic growth and opportunity.”); Letter from 30 Venture Capitalists to Chairman Genachowski (dated October 21, 2009) (“Open markets for Internet content will drive investment, entrepreneurship and innovation. For these reasons [open Internet rules are] pro-investment, pro-competition, and pro-consumer.”); Free Press Comments at 44–45 (asserting that the absence of nondiscrimination protections will have a large impact on investments made in the application and content markets and that the “potential for discriminatory treatment and nonstandard network management could destroy investor confidence in the applications market, stifling growth in the one segment that drives the information economy”).